

What is claimed is:

1. An automatic tracking apparatus for a reflector comprising:

a surveying machine body;

an illumination portion disposed in said surveying machine body for illuminating a measurement light toward a reflector;

a light receiving portion which is disposed in said surveying machine body and which has an image sensor for receiving a reflection light image of the measurement light illuminated toward said reflector;

arithmetic means for calculating a position of the reflection light image from said reflector in an area of said image sensor; and

a rotation mechanism for rotating said surveying machine body so as to position said reflector on a light receiving optical axis of said light receiving portion based on the position obtained by said arithmetic means,

wherein said light receiving portion is provided with a light receiving sensor having a smaller area than the area of said image sensor on said light receiving optical axis and also in a conjugated position with said image sensor, and said arithmetic means distinguishes said reflector based on an output of said light receiving sensor.

2. The automatic tracking apparatus for the reflector according to Claim 1, wherein said illumination portion outputs a modulated pulsed light, and said light receiving portion is provided with a synchronization detecting circuit for synchronously detecting the output of said light receiving element based on said modulated pulsed light.

3. The automatic tracking apparatus for the reflector according to Claim 1, wherein said image sensor and said light receiving sensor are disposed in the conjugated position through a beam splitter, and said light receiving sensor receives a quantity of light in the vicinity area of the image center of said image sensor.

4. The automatic tracking apparatus for the reflector according to Claim 1, wherein said illumination portion emits a modulated pulsed light which is a measurement light in an accumulation time during one field of said image sensor, and said image sensor detects the position of the received modulated pulsed light, and the light receiving sensor judges based on the modulation of the pulsed light whether or not the light received by the light receiving sensor is one from the reflector.

5. The automatic tracking apparatus for the reflector according to Claim 2, wherein based on the modulated pulsed light received by said image sensor, the surveying machine body is rotated so as the position of said pulsed light to be the center of said image sensor, and tracks based on the judgment of said light receiving sensor.